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*Primary Examiner*—Donald A. Sparks

*Attorney, Agent, or Firm*—Calfee, Halter & Griswold

#### [57] **ABSTRACT**

A package for mounting I/C chips onto a circuit board is provided. The chip has a surface array of input/output pads on one side which forms a footprint. A carrier is formed of an organic dielectric material having opposite surfaces. A first set of bonding pads is formed on one surface of the chip carrier and arranged to correspond with the chip footprint. A first set of solder ball connections connects the input/output pads on the chip to the first set of bonding pads on the chip carrier. A second set of bonding pads is formed on the other surface of the chip carrier forming a second set of bonding pads. Electrically conducting vias extend through the chip carrier connecting the first set of bonding pads to the second set of bonding pads. An organic circuit board having a coefficient of thermal expansion similar to the chip carrier having electrical connector sites is provided, the sites are arranged in a pattern corresponding to the pattern of the second bonding pads on the chip carrier. A second set of solder ball connections connect the pads of the second set of bonding pads on the chip carrier to the connection sites on the circuit board.

**12 Claims, 3 Drawing Sheets**

# United States Patent [19]

## Gedney et al.

### [54] IC CHIP ATTACHMENT

[75] Inventors: **Ronald W. Gedney, Vestal; Tamar A. Sholtes, Endicott, both of N.Y.**

[73] Assignee: **International Business Machines Corporation, Armonk, N.Y.**

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[51] Int. Cl.<sup>6</sup> ..... **H05K 7/02**

[52] U.S. Cl. .... **361/771; 174/255; 174/258; 174/260; 174/261; 361/767; 361/770; 361/792; 361/795**

[58] Field of Search ..... **174/255, 260, 174/262, 263, 256, 257, 258, 261; 257/777, 778, 782, 393, 723, 724, 702; 361/400, 405, 406, 411, 412, 396, 414, 417, 748, 750, 751, 760, 767, 770**

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